

Notice of Allowability

Application No.

10/667,006

Applicant(s)

MACK, MICHAEL E.

Examiner

Rodney G. McDonald

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed 11-5-07.
2. ☒ The allowed claim(s) is/are 1-4,6-16,18-20 and 23-27.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |


RODNEY G. MCDONALD
PRIMARY EXAMINER

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

Claims 1-4 and 6-8 are allowable over the prior art of record because the prior art does not teach a low energy electron source for at least partially neutralizing space charge of a gas cluster ion beam comprising one or more filaments for emitting electrons; a filament power supply for biasing said one or more filaments to induce low energy electron emission; an anode electrode for accelerating said electrons away from the one or more filaments and toward a gas cluster ion beam having an axis so as to have a neutralizing effect on the space charge of said gas cluster ion beam; an acceleration power supply for biasing said anode electrode with respect to said one or more filaments; a deceleration electrode for decelerating said accelerated electrons; and wherein said one or more filaments each have a positively biased end and a negatively biased end and further wherein said deceleration electrode is directly connected to the positively biased end of said one or more filaments.

Claims 9-14 are allowable over the prior art of record because the prior art does not teach are allowable over the prior art of record because the prior art of record does not teach the claimed vented faraday cup including a plurality of substantially coaxial electrically conductive ring electrodes disposed with gaps between the ring electrodes wherein the plurality of electrically conductive ring electrodes are arranged and electrically connected in at least three groups of at least two ring electrodes, each group independently electrically biased so as to minimize undesired charged particle leakage into or out of the cup.

Claims 15, 16 and 18 are allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including the vented enclosure surrounding and extending in front of the strike plate and comprising a multiplicity of electrically conductive ring electrodes disposed with gaps between the ring electrodes wherein the multiplicity of electrically conductive ring electrodes are arranged and electrically connected in at least three groups that are independently electrically biased for minimizing undesired charged particle leakage into or out of the faraday cup and each of the at least three groups of electrically connected ring electrodes comprises two or more ring electrodes.

Claims 19, 20, 23 and 24 are allowable over the prior art of record because the prior art of record does not teach the claimed subject matter including the vented enclosure surrounding and extending in front of the strike plate and comprising a plurality of electrically conductive ring electrodes disposed with gaps between the ring electrodes wherein the plurality of electrically conductive ring electrodes are arranged and electrically connected in at least three groups of at least two ring electrodes, each group independently electrically biased so as to minimize undesired charged particle leakage into or out of the cup.

Claims 25 and 26 are allowable over the prior art of record because the prior art of record does not teach a vented Faraday cup comprising an electrically conductive strike plate having a surface for receiving a gas cluster ion beam; and a vented enclosure surrounding and extending in front of the strike plate so as to define a cup

having an open end adapted to receive a gas cluster ion beam; wherein the surface of the electrically conductive strike plate includes saw-tooth grooves.

Claim 27 is indicated as being allowable over the prior art of record because the prior art does not teach the claimed subject matter including wherein the vented enclosure comprises a plurality of substantially coaxial, electrically conductive ring electrodes disposed with gaps between the ring electrodes, and further wherein said plurality of ring electrodes are arranged and electrically connected in at least three groups of at least two ring electrodes, each group adapted for independent electrical biasing to minimize undesired charged particle leakage into or out of the cup.

The closest prior art to Sakai et al. (JP 02-144841) teaches a vented Faraday Cup but fails to teach the electrode arrangement required by Applicant's claims or the strike plate having a saw-tooth configuration. Bisson et al. (U.S. Pat. 6,723,998) cited of interest teach a strike plate with a specific configuration (i.e. Fig. 2) but fails to show or suggest a saw-tooth configuration. Furthermore, Fuzishita et al. (U.S. Pat. 4,916,311) does not show the deceleration electrode connected directly to the positively biased end of the emitters and because Fuzishita et al. teaches away from this connection.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Rodney G. McDonald
Primary Examiner
Art Unit 1795

RM
January 10, 2008